

Public Perception towards Genetically Modified Organisms (GMO) in Singapore

Introduction

It has been over 50 years since the double-helix structure of DNA molecule was first discovered. With the rapid development in the field of molecular genetics in the last half decade, scientists nowadays can make use of various genetic engineering techniques to benefit modern lives in many aspects. Today, genetically modified organisms (GMOs) are being extensively used to assist and improve agricultural production, medical researches, energy generation, and even waste treatment. As GMOs become more commonly used in food and other daily products, it has become increasingly important to investigate the public perception towards GMOs.

Objectives

We aim to investigate the Singaporean public perception, including attitude and awareness, towards GMOs. We also look into their main information source as well as their opinion on government GMO regulation and publicity.

Subject summary

The information is collected by a survey (Appendix I) which is conducted both online and offline. All data were collected from 23 of July to 27 Aug, 2015 in Singapore with the total number of valid responses of 131. Figure 1 to Figure 4 below shows a summary of subjects involved in this study.

Figure 1. Gender

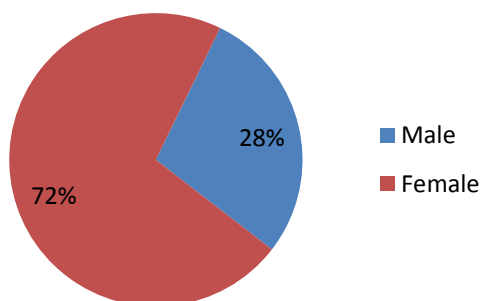


Figure 2. Age Group

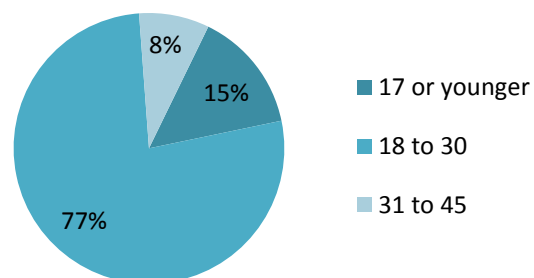
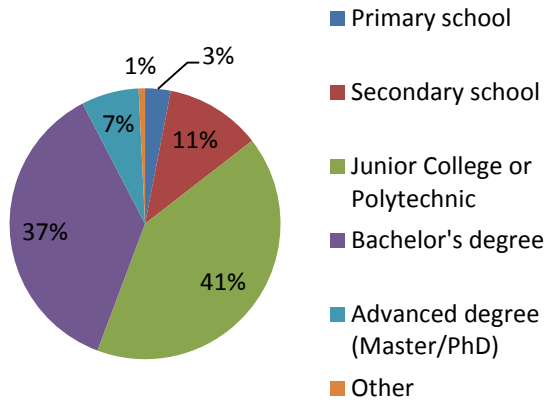
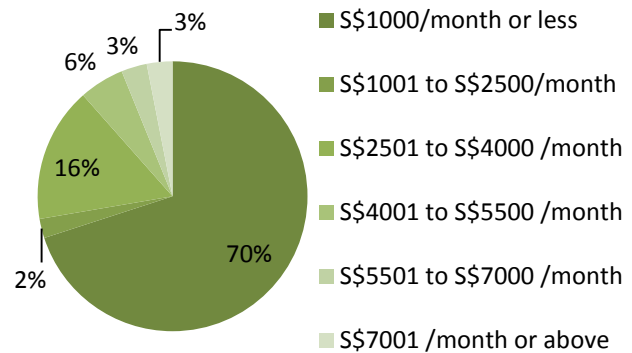
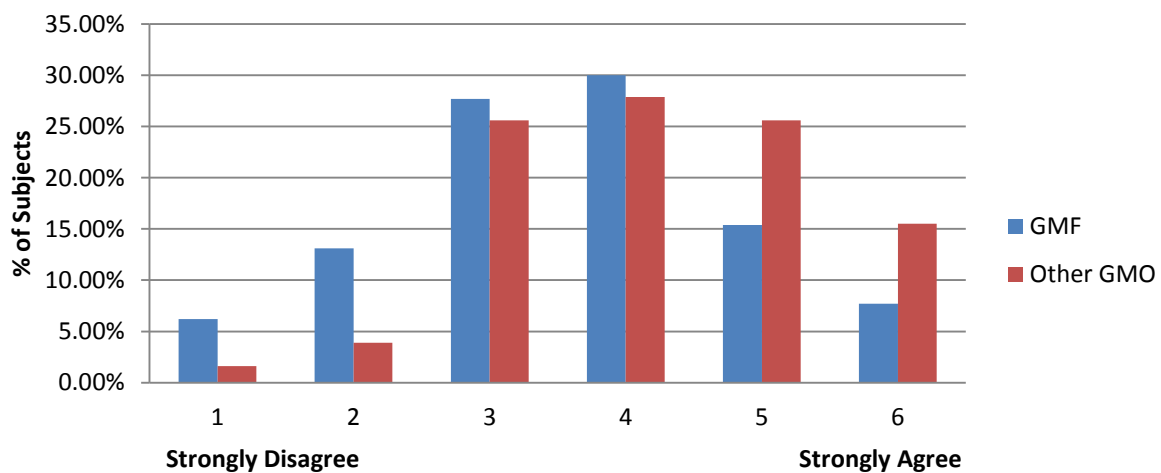


Figure 3. Education Level**Figure 4. Income Group**

Results and Discussion

General attitude

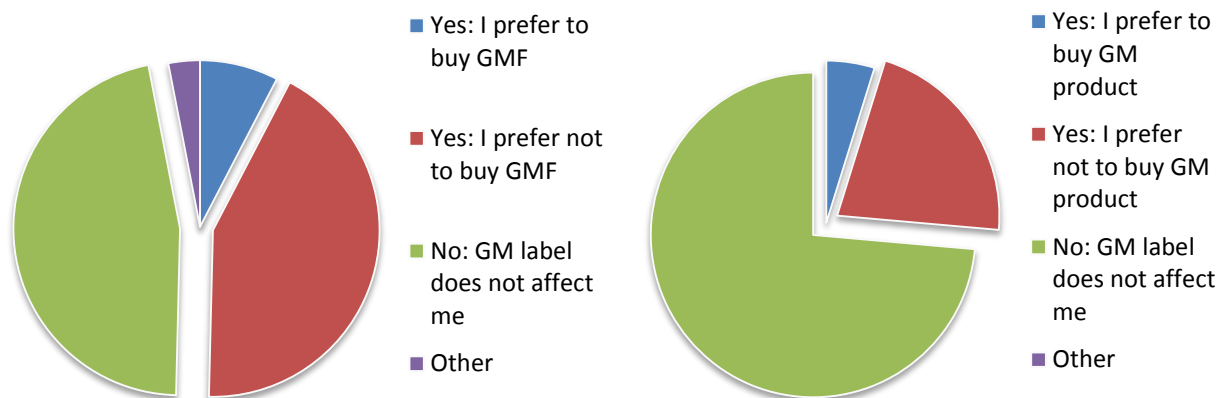
The general attitude towards GMOs is investigated separately for genetically modified food (GMF) and other GMOs. In contrast to some previous studies, we find no significant differences in the subjects' safety concerns towards GMF and other GMOs, with both showing a relatively positive attitudes. The survey shows that 42% of the subjects think GMF are safe while 13.7% thinks they are not. For other GMOs, the figure is 45.8% and 10.7% respectively. Interestingly, although subjects seem to be equally confident in the safety of GMF and other GMOs, their attitudes differed significantly when asked whether they would support the use and development of GMF or other GMOs (figure 5).

Figure 5. Responses to "I support its use and development" for GMF and other GMOs

It can be seen from figure 5 that although the public believes that current GMF and other GMOs are equally safe, they do hold a more conservative and cautious attitude towards the use and development of GMF than other GMOs. This suggests that extra attention must be paid to the regulation and control of GMF during research and release. It also needs to be pointed out that the majority of the public holds a positive attitude towards the future of GMOs, with 23.1% for GMF and 41.1% for other GMOs choosing “Agree” (5) or “Strongly Agree” (6) on supporting its use and development.

Responses to another question also confirm public’s concern towards GMF. When asked whether a GMO label will affect their purchase decision, 20.6% of the subjects say that they prefer to buy non-GMO products (excluding food) and 70.2% says it will not affect their decision. On the other hand, 42.7% of the subjects prefer not to buy GMF and only 46.6% says it will not affect their decision. For both GMF and other GMO product, less than 10% of the subjects say they will choose them over traditional products (figure 6). This result shows that although people generally believe that GMOs are safe, they are still not perfectly comfortable with using, and especially consuming them as food in their daily lives. One possible origin of this irrational “fear” for GMOs could be that people are not well informed about GMOs. Hence, although rationally they understand and support the development of GMO products, they are less clear about the actual risk associated with them. As a result, they prefer to “playing safe” when making purchase decision about GMO products. To further confirm, we have next investigated the public’s general awareness of GMO.

Figure 6. Responses to “Will a GM label affect your buying decision?” for GMF and other GMO product



General Awareness & Information Source

According to the survey result, 64.1% of the subjects showed a relatively low attention level regarding GMO and 63.4% of the subjects evaluate their knowledge about GMO as 3 or lower out of 6, with 30.6% rating 2 or lower. This suggests that both the awareness and the knowledge level of the public can be further improved.

In order to find the best way to raise public awareness, we next tried to reveal the main, preferred, and most trusted information source of the public. Every participant was asked to pick up to 3 of their major and preferred GMO information source respectively, and the result is listed below in figure 7 and figure 8. It is noticeable that although a large percentage of the public prefer to learn about GMOs through hands-on science experiments and researches, only a small portion of the public lists them as their main information source. It indicates that more relevant opportunities should be made available for people who are interested or curious about GMOs to learn more about the field. In addition, 83.1% of the participants chose scientific research results and interpretation as their most trusted information source about GMOs. Governmental agencies, with 16.2%, comes second in the ranking. It can be therefore suggested that school, universities and relevant government agencies should also encourage and assist the public in more possible ways to raise the awareness.

Figure 7. Main Information Sources of the public (%)

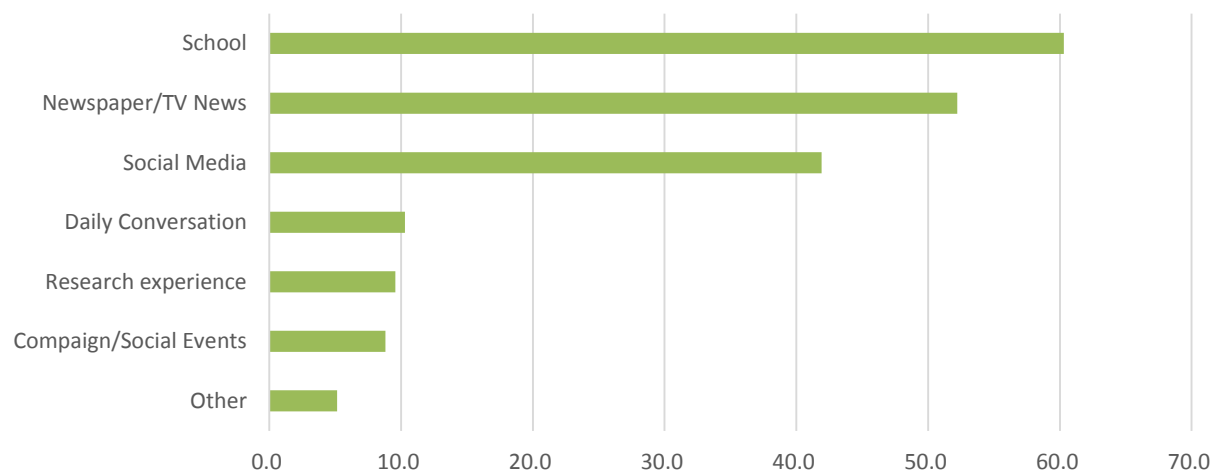
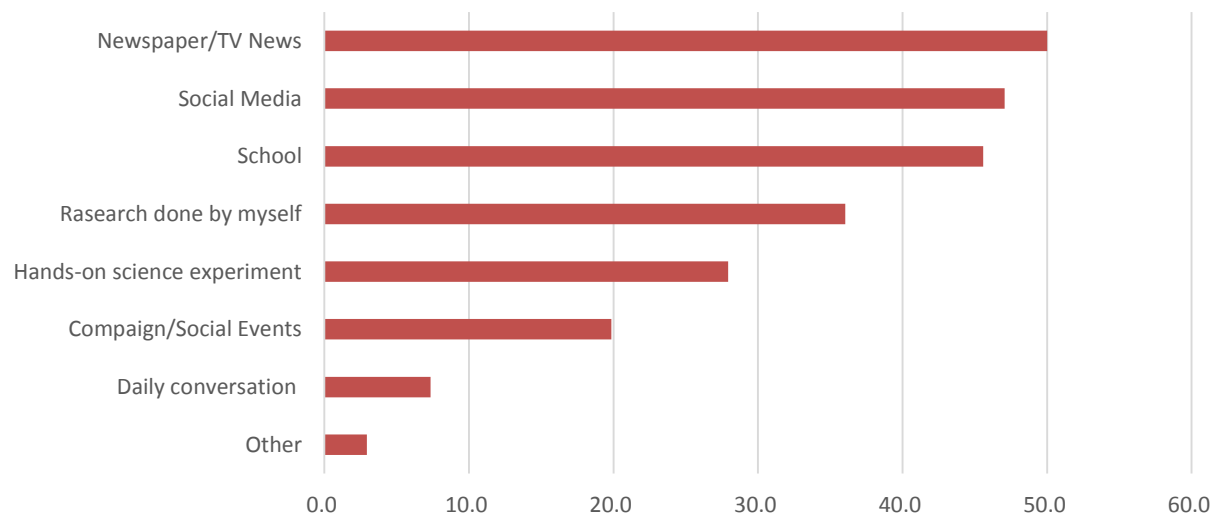


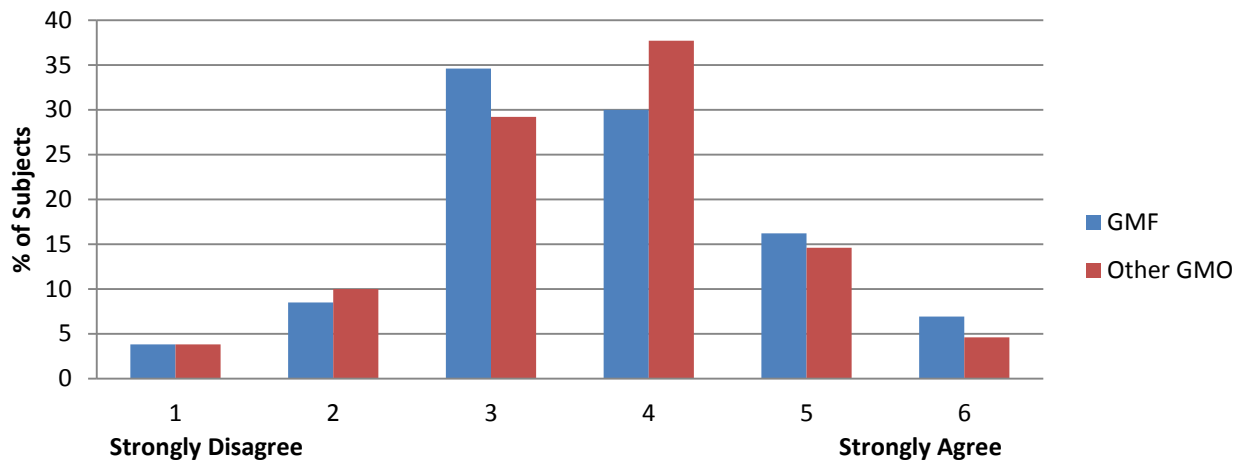
Figure 8. Preferred Information Source of the Public (%)



Government Regulation & Publicity

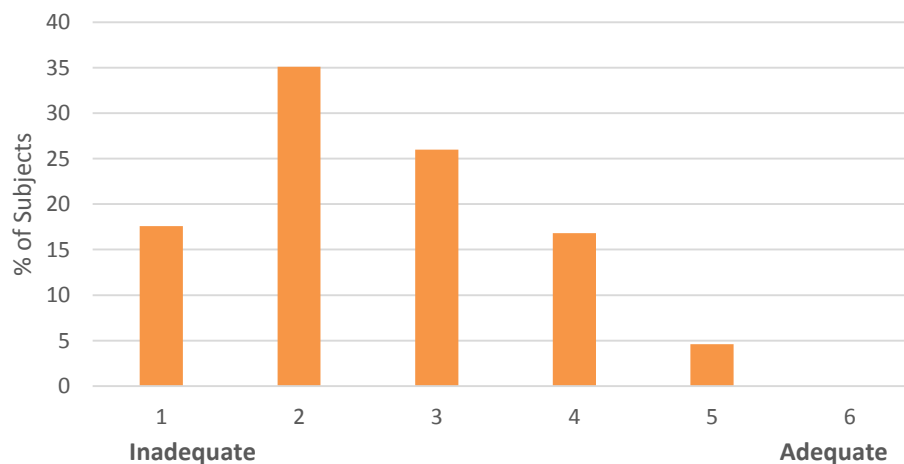
In the end, we investigated the public's opinions on government regulation and publicity here in Singapore. Participants showed no significant difference in their opinions about the regulation of GMF and other GMO product, with 53.1% and 56.9% showing more positive attitude respectively.

Figure 9. Responses to "I believe GMF/ other GMO application is under tight regulation in Singapore"



On the other hand, the public showed a more negative attitude towards government's effort in publicity and informing. According to the survey result, 78.7% of the public feels that the government's efforts in publicity is more inadequate than adequate, with over half (52.7%) voting 2 or lower on a scale from 1 to 6 (figure 10). This suggests that more should be done by relevant government agencies to help the public make more informed choices regarding GMO products.

Figure 10. Evaluation on Government's Effort in Informing the Public



Conclusion

It can be concluded from the result that although the general public in Singapore holds a generally positive attitude towards the safety of GMO products but they are less willing to purchase such products. They have also shown a more cautious and conservative attitude towards GMF than other GMO products. In addition, general public also thinks more efforts should be made to better inform and publicize about GMOs. One of their preferred, but less available way, is hands-on scientific experiences. It seems that there is still a long way for GMO products to go before it is completely accepted here in Singapore. It can be suggested that government agencies, scientific institutes, schools and universities should work together to make the public more aware and informed about the true value and risk associated with GMO. Meanwhile, it should be kept in mind that a tight regulation must be maintained in order for it to benefit the society in a secure and sustainable way.